

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A gas filter for removing a contaminant from a gas comprising an absorptive system, wherein the absorptive system comprising:
a polymer matrix; and
one or more reactive additives,
wherein the absorptive system comprises an absorption capacity of at least about 0.01 gram of captured contaminants per gram of the absorptive system or a water content of at least about 5 percent by weight.
2. (Previously Presented) The gas filter of claim 1, wherein the polymer matrix comprises a polymer having a diffusivity of greater than 10^{-8} cm²/sec or a T_g of less than about 20 °C.
3. (Previously Presented) The gas filter of claim 2, wherein the polymer comprises at least one of polyethylene/polypropylene random copolymers, poly(dimethylsiloxane), styrene-butadiene random and block copolymers, poly(vinyl chloride) plasticized with dioctyl phthalate, poly(acrylamide) plasticized with water, and poly(acrylamide) plasticized with glycerol.
4. (Previously Presented) The gas filter of claim 3, wherein the polymer comprises a high molecular weight poly(acrylamide) having a weight average molecular weight ranging from about 1 million to about 50 million.
5. (Previously Presented) The gas filter of claim 1, wherein the one or more reactive additives comprise water, catalytic reactants, stoichiometric reactants, catalytic/stoichiometric reactants, acid-scavenging agents, base-scavenging agents, reactive nanoparticles, or a combination thereof.
6. (Canceled)

7. (Currently Amended) The gas filter of claim 1–~~6~~, wherein the one or more reactive additives comprise one or more of a transition metal, a transition metal salt, sulfonic acid, carboxylic acid, phosphoric acid, benzoic acid, NaOH, ethylene diamine, an amine, Na₂CO₃, a primary amine, and water.
8. (Previously Presented) The gas filter of claim 7, wherein the one or more reactive additives comprise sulfonic acid and water.
9. (Previously Presented) The gas filter of claim 7, wherein the one or more reactive additives comprise an amine and water.
10. (Previously Presented) The gas filter of claim 7, wherein the one or more reactive additives comprise reactive nanoparticles.
11. (Previously Presented) The gas filter of claim 1, wherein the one or more reactive additives are uniformly distributed throughout the polymer matrix.
12. (Previously Presented) The gas filter of claim 1, wherein the one or more reactive additives form a layer that is separate from but in contact with the polymer matrix.
13. (Canceled)
14. (Canceled)
15. (Previously Presented) The gas filter of claim 1, wherein the absorptive system further comprises one or more non-reactive additives.
16. (Previously Presented) The gas filter of claim 15, wherein the one or more non-reactive additives comprise one or more of sorbitol, water, and glycerol.

17. (Previously Presented) The gas filter of claim 1, wherein the absorptive system-comprises a high molecular weight poly(acrylamide) having a weight average molecular weight ranging from about 1 million to about 50 million, sulfonic acid beads, sorbitol, water, and glycerol.

18. (Previously Presented) The gas filter of claim 1, further comprising a substrate, wherein the absorptive system contacts at least a portion of an outer surface of the substrate.

19. (Canceled)

20. (Previously Presented) The gas filter of claim 18, wherein the substrate comprises a polyolefin, a polyethylene, a polypropylene, a polyester, a polyamide, nylon 6, nylon 66, a cellulosic material, or a combination thereof.

21. (Previously Presented) The gas filter of claim 20, wherein the substrate comprises a polyamide non-woven fabric.

22. (Previously Presented) The gas filter of claim 18, further comprising a housing which at least partially holds the absorptive system, the substrate, or both.

23. (Canceled)

24. (Previously Presented) A gas filter for removing a contaminant from a gas comprising:

an absorptive system comprising (i) a polymer matrix, wherein the polymer matrix comprises at least one of poly(acrylamide), polyethylene/polypropylene random copolymers, poly(dimethylsiloxane), styrene-butadiene random and block copolymers, and poly(vinyl chloride) plasticized with dioctyl phthalate; and (ii) one or more reactive additives, wherein the absorptive system further comprises an absorption capacity of at least about 0.01 gram of

captured contaminants per gram of the absorptive system material or a water content of at least about 5 percent by weight;

a substrate, wherein the absorptive system contacts at least a portion of an outer surface of the substrate; and optionally,

a housing which at least partially holds the absorptive system, the substrate, or both.

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. (Canceled)

29. (Canceled)

30. (Canceled)

31. (Canceled)

32. (Canceled)

33. (Previously Presented) The gas filter of claim 1, wherein the absorptive system is biostat.

34. (Previously Presented) The gas filter of claim 1, wherein the gas is air.

35. (Previously Presented) A method of removing a contaminant from a gas, comprising contacting a gas with a gas filter, wherein the gas filter comprising an absorptive system, wherein the absorptive system comprising a polymer matrix and one or more reactive additives, and wherein the absorptive system comprises an absorption capacity of at least about

0.01 gram of captured contaminants per gram of the absorptive system or a water content of at least about 5 percent by weight.

36. (Previously Presented) The method of claim 35, wherein the polymer matrix comprises a polymer having a diffusivity of greater than 10^{-8} cm²/sec or a T_g of less than about 20 °C.

37. (Previously Presented) The method of claim 35, wherein the polymer comprises poly(acrylamide).

38. (Previously Presented) The method of claim 35, wherein the one or more reactive additives comprise one or more of a transition metal, a transition metal salt, sulfonic acid, carboxylic acid, phosphoric acid, benzoic acid, NaOH, ethylene diamine, an amine, Na₂CO₃, and water.

39. (Previously Presented) The method of claim 35, wherein the one or more reactive additives comprise sulfonic acid and water, or an amine and water.

40. (Previously Presented) The method of claim 35 wherein the one or more reactive additives comprise reactive nanoparticles.

41. (Previously Presented) The method of claim 35, wherein the absorptive system further comprises one or more non-reactive additives.

42. (Previously Presented) The method of claim 35, further comprising a substrate, wherein the absorptive system contacts at least a portion of an outer surface of the substrate.

43. (Previously Presented) The method of claim 42, wherein the substrate comprises polyolefin, polyethylene, polypropylene, a polyester, a polyamide, nylon 6, nylon 66, a cellulosic material, or a combination thereof.

44. (Previously Presented) The method of claim 42, wherein the substrate comprises a polyamide non-woven fabric.
45. (Previously Presented) The method of claim 35, further comprising a housing which at least partially holds the absorptive system, the substrate, or both.